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COMPLETE SPECIFICATION

Apparatus for Delivering Measured Quantities of Powdered Substances.

I, GUSTAV TANNER, of 30 Hagmattstrasse, Olten, Canton of Solothurn, Switzerland, of Swiss nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

This invention relates to apparatus for delivering measured quantities of powdered substances of the type having a container for holding the substance and a cylinder adapted to be rotated stepwise and situated at the lower end of the funnel-shaped lower part of the container, the cylinder having on its periphery a number of recesses to receive a measured quantity of the powdered substance. Ratchet teeth are arranged coaxially with the cylinder and are engaged by two spring means, one of which serves as a driving member during the stepwise rotation of the cylinder by means of an operating arm, whilst the other serves to prevent rotation of the cylinder during retraction of the first-mentioned spring means.

The object of the invention is to provide an improved apparatus of the foregoing type in which the risk of losses of the material at the side wall of the lower part of the container is reduced to a minimum. A further object is to provide apparatus in which the cylinder is readily detachable and interchangeable with other cylinders having recesses of different capacity whereby the measured quantity of powdered substance delivered by the apparatus may be varied, the cylinder and its operating mechanism being capable of being withdrawn and re-installed substantially as a complete unit.

According to the invention an apparatus for delivering measured quantities of powdered substance of the aforesaid type comprises an axle which is fixedly connected to the container and upon which the cylinder revolves and a spiral spring arranged on the hub of the operating arm coaxially with the cylinder for the purpose of automatically retracting the operating arm, the spring means being constructed as arcuate spring tongues arranged coaxially with the said axle, one being fixedly mounted on the said

hub which is rotatably mounted on the cylinder axle and the other being secured to the container, whilst the ratchet teeth are bevelled on one side and are arranged at one end of the cylinder.

One embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a side view of the apparatus with the lower part in section,

Fig. 2 is a front view of the lower part of the apparatus,

Fig. 3 is a section on the line 3—3 in Fig. 1,

Fig. 4 is a section on the line 4—4 in Fig. 1, and

Figs. 5 and 6 are views of two details.

The apparatus shown in the drawing has a container for holding the powdered substance, consisting of a wall part 1 which is set on a funnel-shaped lower part 2 and can be tightly closed at the top end by means of a cover 3.

The lower part 2 has a cylindrical transverse bore 4 in which a cylinder 5 is arranged which is rotatable on an axle 6. The cylinder 5 is provided with four longitudinal recesses 7, parallel to the axle, for taking a measured quantity of the powdered substance from the container.

One end of the cylinder 5 is fitted with four ratchet teeth 8. A leaf spring 9 (Fig. 5), arranged on the lower part 2 concentric with the bore 4, engages with a tongue 9' at the back of one of the ratchet teeth 8 and prevents its turning in one of the directions of rotation.

A disc 10, which forms a hub for a projecting arm 11, is pivotably carried on the axle 6. A second leaf spring 12 (Fig. 6), which is secured against turning by means of a flat 10' on the periphery of the disc 10, has a tongue 12' which is always in engagement with one of the ratchet teeth 8.

The disc or hub 10 is secured against axial displacement by a cover 13 which is held on the lower part 2 by means of a nut 14 screwed on to a threaded end of the axle 6. A pin 13', set into the cover 13, passes

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through a hole in the leaf spring 9 and projects into a hole in the lower part 2. The operating arm 11 on the disc 10 projects through an opening 15 cut in the cover 13, this opening allowing the disc 10 to be rotated through 90°.

A spiral spring 16, one end of which is held in a hole in the cover 13 whilst its other end projects into a hole in the disc or hub 10 of the operating arm 11, is arranged in such manner that the disc 10 and the arm 11 always return to the position shown in the drawing when the arm is released after a swivelling operation.

The mode of operation of the apparatus is as follows:

After the container has been filled with powdered substance and the cover 3 has been replaced, by depressing the operating arm 11 and swivelling it downwards through 90° the cylinder 5 is rotated through a quarter turn on its axle.

This partial rotation is effected because the flat 10' on the disc 10 connected to the operating arm 11 carries the leaf spring 12 round with it (Fig. 6). The tongue 12' of the leaf spring 12 lies in the initial position each time at the back of one of the ratchet teeth 8 at the end of the cylinder 5, so that this cylinder is carried round by the leaf spring.

When the operating arm 11 is released, the spiral spring 16 brings the arm 11 together with the disc 10 and the leaf spring 12 back into the initial position, whilst the tongue 9' of the leaf spring 9, which has sprung in at the back of one of the ratchet teeth 8, prevents the cylinder 5 from turning back.

At every quarter turn of the cylinder 5 one of the recesses 7 in the cylinder 5 comes into such a position that it constitutes the closure of the lower part 2 of the container and is filled with powdered substance. The opposite recess 7, which had previously been filled in the same manner, is disposed over an opening in the bottom of the lower part 2 so that the powdered substance contained in it can fall out.

The apparatus may, as shown in the drawing, be fixed on a wall or may be stood on a base by means of a tripod.

The cylinder 5 could also have only three or even more than four recesses 7, when a corresponding number of ratchet teeth 8 would have to be provided and the operating arm 11 would have to be designed to swivel

through an angle corresponding to the distance between the recesses 7.

The cylinder 5 might also be exchangeable for another with recesses 7 of smaller capacity.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Apparatus for delivering measured quantities of powdered substances of the type set forth comprising an axle which is fixedly connected to the container and upon which the cylinder revolves and a spiral spring arranged on the hub of the operating arm coaxially with the cylinder for the purpose of automatically retracting the operating arm, the spring means being constructed as arcuate spring tongues arranged coaxially with the said axle, one being fixedly mounted on the said hub which is rotatably mounted on the cylinder axle and the other being secured to the container, whilst the ratchet teeth are bevelled on one side and are arranged at one end of the cylinder.

2. Apparatus according to claim 1, wherein the rotatable cylinder is exchangeably arranged in a transverse bore in the lower part of the apparatus so that it may be replaced to alter the measured quantities by a cylinder with recesses of other dimensions.

3. Apparatus according to claim 1 or 2, 90 wherein the two aforesaid spring tongues lie substantially in a single plane perpendicular to the cylinder axle and are arranged between the ratchet teeth on the cylinder and a flange on the hub of the operating arm, and the said hub is secured against axial displacement by a cover secured to the container and mounted on the cylinder axle.

4. Apparatus according to any of the preceding claims, wherein the aforesaid cover has a recess in which the aforesaid spiral spring for retracting the operating arm is arranged, one end of this spiral spring being secured to the hub of the operating arm and the other to the cover.

5. Apparatus for delivering measured quantities of powdered substances substantially as herein described with reference to the accompanying drawings.

Dated this 24th day of September, 1946.

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Agent for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale.]

